

TIMELINEZ

T S 2 0 6 8 A N D 1 5 0 0 I N F O R M A T I O N

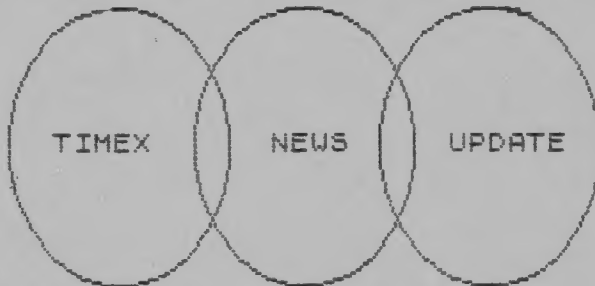
SAN FRANCISCO / BAY AREA

TIMEX / SINCLAIR USERS

VOLUME 1 ISSUE 4

O C T O B E R

\$1.00



If the print in this column seems different from usual, it is because this article is being produced on the new 2068 computer from Timex. Sam Barron has received two sample machines from corporate headquarters and he has graciously allowed TIMELINEZ to borrow one. This is probably the first published matter in the world to be produced on the 2068. Once again TIMELINEZ is on the leading edge of technology.

There is not too much more to report on new products other than what was listed in our last issue. It seems pretty certain that the 2068 will be the only model sold and that the 2048 has been scrapped. This probably makes a lot of sense when you consider the realities of the current marketplace.

Much attention has been focused on the bank switching feature of the 2068. Bank switching gives the computer the ability to access up to 256*64K. This works out to 16 million bytes of memory. For practical purposes this means that you can exit a program and instantly access an external ROM memory for any purpose before returning to your program.

The tape handling capabilities of the 2068 have been greatly improved over those of the TS1000. Load and save is much quicker (about 5 times the speed of the 1000) and a good load is achieved almost every try. The keys are made out of hard plastic and have a very good "feel".

Although the suggested retail price for the 2068 is \$199.99, it is already listed in the new BEST catalog for \$148.32. BEST says that it will not be available in their stores until November.

Sunset Electronics in San Francisco is having a special TIMEX Demonstration Week celebration on Sep. 17-25. They plan to have a TIMEX representative on hand to answer questions and demonstrate products. Please see their ad for more details.

One final note. The 2068 has already been on display at both the Peninsula and the South Bay user group meetings. The next chance to view it will be on Sept. 15 at the East Bay meeting. All are invited to come.

TIMELINEZ (C) IS THE JOINT PUBLICATION OF THREE TIMEX/SINCLAIR USER GROUPS IN THE SAN FRANCISCO / OAKLAND BAY AREA. OLD AND NEW MEMBERS ARE ALWAYS WELCOME - SO ARE HARDWARE, SOFTWARE, AND COMPUTER BEGINNERS. SEE YOU AT THE NEXT MEETING.

FUTURE MEETINGS

SOUTH BAY	LAST TUESDAY SEPTEMBER 27 OCTOBER 25
PENINSULA (PUG)	THIRD SUNDAY SEPTEMBER 18 OCTOBER 16
EAST BAY (EBZUG)	THIRD THURSDAY SEPTEMBER 15 OCTOBER 20

AMATEUR RADIO
BY: TEDDY E. HELDERMAN

For those interested in using their ZX80/81 or Timex/Sinclair TS1000 computer in conjunction with their amateur radio equipment should send for a copy of QZX. This is a newsletter devoted to the use of the Timex/Sinclair Computers in conjunction with amateur radio.

Write to QZX 2025 O'Donnell Drive, Las Cruces, NM88001; Subscription price is \$12.00/yr.

TimelineZ Members who are interested in amateur radio in conjunction with their Timex/sinclair computers should contact George Knighton, KB6WA after the general meeting SBZUG or call him at (415) 657-5347.

For those who are interested there is a ZX80/81, TS1000 Amateur Radio Network that meets on the following schedule:

EAST COAST

	Location	Time/Day	Sys. ops.
1.	7.240MH	1700Z	Sun. K2ZF
2.	3.980MH	0100Z	Sat N3CJP
3.	7.228MH	1900Z	Sat K4KEP
4.	7.228MH	1900Z	Sun K4KEP

GENERAL USA

5.	14.345MH	0100Z	Thu NU4V
6.	14.329MH	2000Z	Sun W9CQD
7.	7.245MH	0001Z	Wed W9CQD

WEST COAST

8.	7.235MH	1800Z	Sat W6AMW
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8/83

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SAT 9-5
SUN 10-5

TELL TIME X CONTEST RESULTS

CONGRATULATIONS TO DENNIS PARKER, KENDRIC SMITH, CHAS. SIVASLIAN, JEFF BRAUN, SCOTT OLDENDORPH, AND NICK CARACAL FOR THEIR ENTRIES IN OUR CONTEST. SINCE WE HAD A SMALLER THAN EXPECTED RESPONSE, WE HAVE DECIDED TO AWARD 4 S/W TAPES TO EACH OF THOSE LISTED ABOVE.

IF EACH OF YOU WOULD SEND TIMELINEZ YOUR CHOICE OF TIME X TITLES ALONG WITH A COUPLE OF ALTERNATIVE CHOICES, WE WILL TRY TO HAVE YOUR PRIZES AT YOUR NEXT LOCAL USER GROUP MEETING. WE HAVE LISTED SOME OF THE ENTRIES BELOW AND WE WILL TRY TO LIST THE REST IN THE NEXT ISSUE. THANKS AGAIN FOR YOUR PARTICIPATION.

DEAR TIMELINEZ,

ONE OF THE MAJOR PROBLEMS FACING THE COMPUTER INDUSTRY IS POOR DOCUMENTATION. WITH THE INTEREST IN COMPUTERS GROWING, PRODUCTS ARE BEING PURCHASED NOT ONLY BY ENGINEERS AND COMPUTER SCIENTISTS, BUT ALSO BY EVERYDAY PEOPLE LOOKING FOR SOFTWARE THAT WILL HELP THEM DO SOME SORT OF WORK OR PLAY AN EXCITING GAME.

WHEN A NEW COMPUTER USER APPROACHES A SOFTWARE DISPLAY, HE VIEWS A NUMBER OF CASSETTES WRAPPED IN CELLOPHANE THAT CANNOT BE OPENED. IF YOU READ THE OUTSIDE LETTERING, IT MAY ONLY SAY SOMETHING LIKE "ORGANIZER, 16K RAM", WHICH DOESN'T TELL MUCH ABOUT WHAT THE PROGRAM DOES. BECAUSE OF A LACK OF INFORMATION ON THE OUTSIDE, COMBINED WITH A LACK OF FAMILIARITY ON THE PART OF THE SALES PEOPLE, I HAVE PASSED UP LOTS OF SOFTWARE THAT I WAS INTERESTED IN.

THERE'S ROOM ON THE CASSETTE TO PUT SOME INFORMATION--WHAT THE SOFTWARE WILL DO, HOW MUCH DATA CAN BE PUT INTO THE FILES, WHAT THE SCREEN DISPLAY LOOKS LIKE, ETC. IF MORE ROOM IS NEEDED FOR INFORMATION OR ILLUSTRATIONS, A LARGER CARDBOARD BOX CAN BE BUILT AROUND THE CASSETTE, MUCH LIKE SOME OF THE MUSIC VENDORS DO.

I THINK THE DOCUMENTATION FOUND INSIDE THE PACKAGE OF MOST PROGRAMS COULD ALSO STAND SOME IMPROVEMENT. IT NEEDS TO BE FRIENDLY AND COMPLETE, TELLING THE USER NOT ONLY HOW TO GET IT STARTED, BUT ALSO WHAT TO DO IF YOU GET STUCK OR HOW TO EXIT WITHOUT LOSING YOUR DATA.

SINCERELY,
DENNIS J. PARKER

DEAR TIMELINEZ,

MY IDEA FOR TIME X WOULD BE AN ADD ON MODULE THAT WOULD HAVE 64KB, A 4 LINE 32 CHARACTER LIQUID CRYSTAL DISPLAY, AND A BATTERY BACK-UP. THIS WOULD MAKE THE TIME X A TRULY PORTABLE MACHINE THAT NEEDS NO MONITOR OR TV.

JEFF BRAUN

THE FOLLOWING EXCERPTS ARE TAKEN FROM AN ENTRY WHICH WAS TOO LONG TO REPRODUCE FULLY:

DEAR TIME X:

...TIME X DOESN'T KNOW WHAT IT IS DOING. I CALLED THE 800 NUMBER RECENTLY TO FIND SUPPLIERS OF PRINTER PAPER IN THE BAY AREA. AFTER A LONG PAUSE, THE PERSON GAVE ME THE NAMES OF SEVERAL STORES. WHEN I CALLED THEM I FOUND THAT THEY DON'T EVEN CARRY THE COMPUTER ANYMORE, MUCH LESS THE PAPER. SUNSET ELECTRONICS WAS NOT MENTIONED.

THE TIME X DISPLAY HAS BEEN UP FOR WEEKS AT THE PAYLESS STORE IN MENLO PARK, BUT IT IS NOT FUNCTIONAL. WHEN THE EMPORIUM DID HAVE A DISPLAY, THERE WERE NO INSTRUCTIONS ON HOW TO USE IT, AND THE SALESPERSON HAD NO KNOWLEDGE ABOUT IT.

THERE SHOULD BE A GRAPHICS PROGRAM RUNNING ON THE SCREEN, WITH A FREQUENT PAUSE TO INVITE A CUSTOMER TO ENTER SOME INFORMATION TO WHICH THE COMPUTER THEN RESPONDS, EG., GIVE YOUR AGE, HEIGHT, SEX AND THE COMPUTER RESPONDS WITH WHAT YOUR WEIGHT SHOULD BE. THEN THE SALESMAN ONLY NEEDS TO KNOW HOW TO LOAD THE PROGRAM EACH DAY.

MAYBE TIME X SHOULD GO BACK TO THE ORIGINAL ADS THAT SINCLAIR USED--"LEARN HOW TO PROGRAM A COMPUTER. AFTER YOU FINISH THE COURSE YOU GET TO KEEP THE COMPUTER." THIS IS WHAT SOLD ME.

I HOPE THAT THESE COMMENTS WILL BE USEFUL.

SINCERELY YOURS,
KENDRIC C. SMITH

FINALLY, TIMELINEZ THOUGHT IT IMPORTANT TO INCLUDE THE FOLLOWING ENTRY EVEN THOUGH IT WAS RECEIVED ANONYMOUSLY AND THEREFORE NOT ELIGIBLE FOR A PRIZE:

DEAR TIMELINEZ,

WE THINK THAT TIME X SHOULD GIVE A FREE 2868 COMPUTER TO EVERYONE WHO WORKS ON THE STAFF OF THE TIMELINEZ NEWSLETTER. THIS WOULD ENCOURAGE GOODWILL BETWEEN TIME X CORP. AND THOSE WHO WORK SO HARD TO CREATE AND MAINTAIN INTEREST FOR THE TIME X COMPUTERS. THANKS.

PUG NEWS

WELL, WE FINALLY SAW IT AT OUR LAST MEETING. I/M TALKING ABOUT THE NEW 2068 COLOR COMPUTER OF COURSE. SAM BARRON OF TIMEX CORP. LOANED US A DEMO. MACHINE THAT HE HAD RECEIVED FROM HEADQUARTERS. I HAD TO PROMISE TO GUARD IT WITH MY LIFE BECAUSE IT WAS THE ONLY ONE HE HAD AT THE TIME.

EVERYTHING WENT WELL HOWEVER, AND WE WERE ALL FAVORABLY IMPRESSED. THANKS SAM, FOR GIVING PUG THE FIRST CHANCE TO EXAMINE THE 2068 IN THE BAY AREA. IF YOU MISSED THE MEETING, WE WILL TRY TO GET IT AGAIN NEXT MONTH.

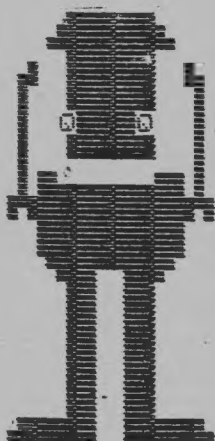
I WAS HAPPY TO SEE SOME NEW PEOPLE AT OUR LAST MEETING AND I HOPE THAT WE WILL BE PICKING UP MORE MEMBERS NOW THAT SUMMER IS ALMOST OVER. BE SURE AND TELL YOUR TIMEX FRIENDS ABOUT OUR GROUP.

PUG WILL BE HOSTING A BAY WIDE MEETING OF ALL THE USER GROUPS ON OCT. 16TH. THIS WILL BE ON OUR REGULAR MEETING SCHEDULE FOR OCT. SO PUG MEMBERS WILL NOT HAVE TO MAKE ANY SPECIAL PLANS. WE WILL START AN HOUR EARLY THOUGH. LET ME KNOW IF YOU WANT TO DISPLAY SOMETHING OR MAKE A PRESENTATION AT THIS EVENT.

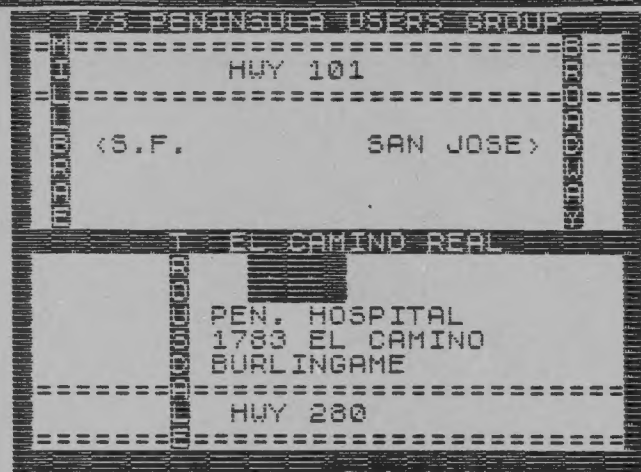
WOULD ANYONE OUT THERE LIKE TO TAKE OVER MY JOB AS CO-ORDINATOR FOR TIMELINEZ? TAKING CARE OF PUG AND THE S/W LIBRARY AS WELL AS WORKING ON TIMELINEZ IS GETTING TO BE A BIT MUCH. I WOULD BE GLAD TO SPEND AS MUCH TIME WITH A NEW PERSON AS IT TAKES TO BREAK HIM OR HER IN. THIS OFFER APPLIES TO ALL THE GROUPS. ANY VOLUNTEERS? YOU WOULD BE WORKING WITH SOME GOOD PEOPLE.

I HOPE TO SEE YOU ALL SEP. 18TH.

George



YOU CAN BE PART OF THE
fun as well.



MEETINGS ARE HELD ON THE 3RD SUNDAY OF EACH MONTH. 1 P.M. SEP. 18TH

SPECIAL JOINT MEET. OCT. 16
MEET. ROOMS ARE ON LOWER FLOOR.

NOTE PLEASE USE THE ENTRANCE ON THE NORTH SIDE OF THE HOSPITAL. ALSO TRY TO PARK ON NORTH SIDE, NOT IN THE VISITORS LOT. THANKS.

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PARTIAL (NEWSLETTER ONLY) \$10/YR

FOR MORE INFORMATION CONTACT:

GEORGE MOCKRIDGE
263 GATEWAY NO. 107
PACIFICA, CA 94044
(415) 359-3198

SEND NEWSLETTER CONTRIBUTIONS:

FRANK MOURA
858 CHENERY ST.
SAN FRANCISCO, CA. 94131
(415) 333-2231

SEE YOU AT THE NEXT MEETING

ATTENTION ALL BAY AREA USER GROUP MEMBERS.

THE PENINSULA GROUP WILL HOST OUR THIRD JOINT GET-TOGETHER ON SUN. OCT. 16TH. ALL USER GROUP MEMBERS ARE INVITED.

FESTIVITIES WILL START AT 12:00 WITH A JOINT BUSINESS MEETING AT 2:00. COME AND MEET YOUR T/S NEIGHBORS.

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EDITOR: RICK LINK

MEETINGS ARE HELD ON THE THIRD THURSDAY OF EVERY MONTH AT THE WEST BRANCH OF THE BERKELEY PUBLIC LIBRARY. MEETINGS START AT 7:30 PM.

ANY QUESTIONS CONCERNING EBZUG SHOULD BE DIRECTED TO:

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FUTURE MEETINGS

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OCTOBER 20

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CONTINUED ON
PAGE 16

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INFORMATION WANTED
BY: D. K. Mason

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Also, we have a Model 33 Telex machine running at 110 baud on a RS-232 20 ma current loop serial interface, with a paper tape punch attached. The paper tape operates our other equipment and if an error occurs, the entire tape must be begun again. We wrote to several manufacturers for recommendations on how to connect the Model 33 to the TS1000 so that we could type onto the video display terminal in order to correct our errors before having it fed into the paper tape punch. We hope to attach the paper tape punch directly to the TS1000 if

possible. Anyone having a solution to our problem is asked to write to: D. K. Mason at 1209 Fritzen Street, San Jose, CA95122

CONTINUED FROM PAGE 15

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Westport, CT 06880

3. All submissions must be received by January 31, 1984.
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LEARNING 288 ASSEMBLY LANGUAGE PROGRAMMING PART 3

In previous articles we discussed the registers, hex numbers, and wrote a routine to print a message to the screen. In this article we will take a look at a few principles involved with writing loops and accessing tables. Load the basic program from article two of this series, (Vol 1 Iss. 2), write to 4802h. Enter the hex codes in the left columns.

```
21 0A 40      START    LD      HL, TABLE
```

First we want to load the variable PNTR (pointer), with the address of TABLE. PNTR will always hold the current address in TABLE of the byte we want to access. The most convenient way of loading a memory location with a value is to load a 16-bit register pair with this value.

```
22 0B 40      LD      (PNTR), HL
```

Then loading the 16-bit address with the value in the register pair, we need to do this because there is no simple instruction to load a memory location directly with data.

```
2A 0B 40      HKPT    LD      HL, (PNTR)
```

This is the beginning a routine to access a single byte of 8-bit data from a table. PNTR is a program variable that we will use to keep track of the address of the next byte to access.

```
7E           LD      A, (HL)
```

Load the accumulator with the contents of the address pointed to by the HL register pair.

```
23           INC     HL
```

Increment PNTR to the next address in the table

```
22 0B 40      LD      (PNTR), HL
```

The last two instructions updated PNTR, and stored the value back in PNTR. It is very important to make sure all pointers, registers are updated, before continuing operations in general.

```
FE FF        CP      FF
```

We will place the byte FF at the end of our table. This will provide us a means of stopping execution of the program. In this forest we can have a table of any length and not have to change the code. We only have to remember to place FF at the end.

```
0B           RET     Z
```

The way out, if the contents of the accumulator and the contents of address pointed to by HL are the same the zero flag is set (Z) and we will return to BASIC. Of course we could CALL this routine from another program and this

instruction will return us to our program instead of BASIC.

```
FE 10        CP      10
```

The next test we will perform will be to see if the contents of A is larger than 10h, which is the last line on the screen.

```
02 0B 40      JP      NC, HKPT
```

If the byte from the table is less than 10h then the CARRY flag is set (C) and the program continues. Likewise, if the byte from the table is larger than 10h, the CARRY flag will be reset (C). We will then jump to location HKPT and get the next byte from the table.

```
47           LD      B, A
```

The byte we got from TABLE will be used as a counter for a loop that will enable us to get the starting address in the display file.

```
2A 0C 40      LD      HL, (480C)
```

This begins the initialization section of the next loop.

```
23 11 21 00    INC     HL  
LD      DE, 0021
```

21h is the length of one line in the display file.

```
10           ADD     HL, DE
```

This is the processing portion of the addition loop. To get the address for the program we add HL, DE times the number we got from TABLE.

```
10 FD         DJNZ    ADDP
```

Do it until register B = 0

```
06 20         INITL   LD      B, 20
```

Now we will begin to draw the line at the address produced from the previous loop. B now equals the number of characters to draw.

```
23 36 00      INHL    INC     HL  
LD      HL, (HL), 00 --
```

We are at the processing section of the drawing loop. Here we are loading the 8-bit location, addressed by the register pair HL, with the data 00h, which is the TIXEX character code for an inverse space. We could change this to any character we wished.

```
0D 0C 40      CALL    TLOOP
```

CALL if you remember is like GOSUB in BASIC. That is, we will goto TLOOP and then return to the next instruction. We need to have a timing loop here so we can see what happens on the screen. You could change the value in TLOOP later

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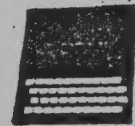
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CONTINUED ON PAGE 18

YOUR TIMEX SINCLAIR 1000 AND
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IF YOU ARE A BEGINNING TS/1000
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WARD PLAIN LANGUAGE INTRODUCT-
ION TO BASIC AND INCLUDES A
BRIEF HARDWARE REVIEW. LIKE ALL
PROGRAMMING TEXTS, THIS ONE ONLY
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ALL OF THE SAMPLE EXERCISES.
PROGRAMS INCLUDE: RECTANGLE
PLOTTER, SUPER CALCULATOR, AND
BAR GRAPH. THE RND FUNCTION IS
INTRODUCED IN A PROGRAM WHICH
ALLOWS A LIMITED "CONVERSATION"
WITH THE COMPUTER. OPERATIONS
WHICH ARE NOT DISCUSSED IN THE
TEXT ARE: USA, PEEK, POKE,
STR\$, SCROLL, RAND, PAUSE, NOT.
THE APPENDIX LISTS VERY GOOD
EXPLANATIONS OR EXAMPLES OF ALL
BASIC OPERATIONS AND SINCLAIR
ERROR CODES. THIS BOOK WONT
MAKE YOU AN EXPERT PROGRAMMER,
BUT IT IS A GOOD PLACE TO START.
--WALTER MILLER

CONTINUED- FROM PAGE 17

on and see what happens.

10 FB DJNZ INLP

This instruction decrements register B, that we previously loaded, then tests the zero flag. If zero = 0 (not zero) then we go back to INLP. If zero = 1 then we continue to the following instruction. DJNZ is what is called a jump relative instruction. Jump relative instructions do not jump to an absolute address, they jump a set amount of STEPS forward or backward. Toni Baker's book Mastering Machine Code on your ZX81 has an excellent description and a table of relative jumps. The subject is a lengthy one and we do not have the space here to do it justice.

06 20	SECLP	LD	B,20
36 00	SLOP	LD	(HL),0
20		DEC	HL
C0 BC 40		CALL	TLOOP
10 FB		DJNZ	SLOP
36 00		LD	(HL),0
		JP	NEXTPT

This is the reverse of the first loop, undrawing the line that we wrote in the first.

C5	TLOOP	PUSH	BC
01 00 01		LD	BC,0150
06	TLOP	DEC	BC
78		LD	A,B
01		OR	C
C2 C0 40		JP	NZ,TLOP
C1		POP	BC
C9		RET	

This is a 16-bit timing loop. That is it can handle timings of up to 65536 decimal. If BC equals 0000 when entering it will start at FFFFh because the first instruction of TLOP decrements BC.

90 00 PNTR

This is the location of PNTR. It is merely a memory location we will use to store the table pointer. We must reserve two bytes of space here for it, so enter two bytes of zero's here.

00 00 00 00 00 00 00 TABLE

Here enter any amount of zeros to accomodate the length of the table you wish to create. You may load the table later by writing to address 48CA.

BE SURE TO PLACE AN FFFh AFTER YOUR TABLE !!!

This program can be used as a subroutine in a game. One way would be to add another test (OP) for your character, a particular object etc. You could also have your program write the table and then entering with CALL.

F.J.M.

9/11/83

Dear Member of East Bay Timex Sinclair User's Group:

I am looking for people to sell computers on a commission basis. Presently we sell the Apple compatible Franklin and the Commodore with the associated hardware and software. In the future we plan to sell the IBM PC or an IBM clone.

One of the strong points of being a computer salesperson is the significant tax benefits. The hardware and software you buy is part of your business and can be deducted. If you are like me you find that there is always something more that you would like to add to your system(s).

If members of your organization are interested in using your computer awareness to help you make extra income this is the opportunity that may suit you.

For more information write or call me at the following address and telephone number:

Steven Perrott
1130 Larkin Apt. 33
San Francisco, California 94109
(415) 776-6752

Thank you for your attention to this opportunity.

BOOK REVIEW

BY: Jeanette Hancock

Book: The Essential Guide to Timex/Sinclair Home Computers
By: Peter Morse, Ian Adamson, Ben Anrep, and Brian Hancock

This is an excellent book to guide any ZX81 or TS1000/2000 user to a better understanding of how to program his computer more efficiently and effectively all around. It's a thick book, 526 pages for only \$8.95 at your nearest B. Dalton's bookstore.

What attracted me to it was the amount of information it at this price compared to other ZX81 books at higher prices but with less material. This book

not only covers beginning Basic programming but also more advanced programming for those who catch on. It covers graphics for plotting, some coding for the display files and sorting array programs. Towards the end, it covers application programs, game writing with a special section on the TS2000. My favorite part is the end program library listing various application software that cover coding, decimal conversions and game programs that can be run as they are or added to as the programmer desires. It's one of the most comprehensive and detailed books of software information that I've read yet on the Timex/Sinclair series of computers.

DUAL TRACE 'SCOPE'

w/trigger & cursor.

155,000 samples per second. High Resolution Printer Plotter. Works with ZX81/TS1000, 16K RAM, ZX or TS2040 printer & our Analog Interface Board. Cassette tape & manual... **\$35.**

FREQUENCY ANALYSIS— 'FFT'.

Fast Fourier Transform on EPROM.

4K of 280 code. 256 points of magnitude & phase data calculated in one second. This can be used as a subroutine with the 'SCOPE' to display frequencies up to 75 KHz. Two 2716's or one 2764 & docs... **\$75.**

ANALOG INTERFACE BOARD

8 channels A/D - 8 channels D/A. High Speed 1.6 micro-seconds A/D convert time. Easy to program. Many Jumper & switch selectable options. Has features which allow easy interfacing to other micros such as TS2000, TRS-80, Apple, CBM 64, Jupiter Ace, others. Manual w/software. You must see spec sheets to appreciate this board... **\$195.**

EPROM BOARD containing 'SCOPE' & 'FFT' at 8K to 16K. The Basic part of the program is transferred up to RAM for use. Consists of four 2716's on the 'Hunter' board with piggyback connectors... **\$100:** EPROMS alone-inquire.

ANALOG INTERFACE with EPROM

Board attached and piggyback mounting... **\$275.**
 Box and ribbon cable mount for Analog Board... **\$30.**

HIGH RESOLUTION PRINTER

Graphics, data acquisition, averaging, & scaling routines. Graticule optional. Can be used with or without Analog Board. The graphs on the right are of heartbeats captured with this program, an electrocardiograph, and the hardware pictured.

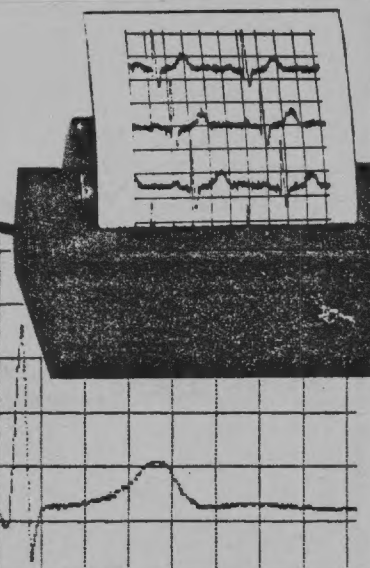
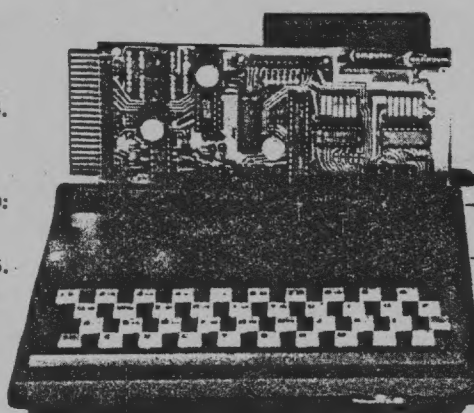
Cassette tape & manual. Terrific value... **\$35.**

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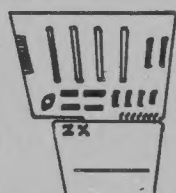
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(415) 752-6294



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 Application Book... **\$10.**



See
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 mag.

CONNECTORS

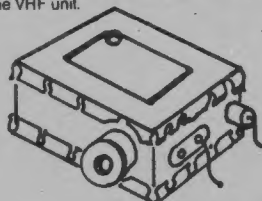
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